

## REMARKS

### I. ART REJECTIONS

Notwithstanding the number of pages regarding the art rejections, the art rejections do not establish a prima facie case for the reasons of record and for the reasons discussed above.

For example, the claims recite distinguishing combinations of limitations, but the art rejections find only bits-and-pieces in different references and the art rejections do not properly establish the combination of the references nor the other issues addressed in the arguments of record.

As in Hyatt-'852 (discussed above), "the mere listing of elements does not satisfy the examiner's burden of presenting a prima facie case of obviousness of the claims as a whole."

For example, the claims recite distinguishing limitations; such as the combinations of elements and acts including prior and next image information, spatial interpolation, subpixel vectors, transform, weighting and scaling, communication, and display. However, the Examiner has not properly addressed the combinations.

Many of the citations to the references do not use the same terminology as with the claim limitations, yet the art rejections do not provide a proper Graham, Gechter, or Rouffet analyses (discussed above) to reconcile the differences.

Some of the cited portions of the references are mere mentions of terminology without an enabling disclosure of the terminology.

The statements are improper hindsight statements guided by the instant claims with no showing of motivation with Graham, Gechter, or Rouffet analyses.

In effect, the art rejections are based upon erroneous conclusory statements attempting to read the claims on the references in hindsight.

### 1.1 35 USC 103 Rejections

The Applicant respectfully traverses the 35 USC 103 rejections for the reasons of record, for the additional reasons below, and for the additional reasons discussed above.

The § 103 rejections do not properly address the nature of the references nor the combinations of the references. For example, the rejections do not establish why such references are pertinent to the instant claimed invention. Further, the references are directed to different types of systems with different types of implementations therebetween where the manner of making the combinations is not obvious.

Anderson is directed to correction of clock errors in a satellite.

Golin is directed to video compression.

Graf is directed to synthesized images.

Itoh is directed to recording information on a disk.

Jain is directed to estimating block displacement.

Marsh is directed to a simulation system.

Netraveli '272 is directed to interpolation for motion estimation.

Nickel is directed to image processing.

Robinson is directed to edge processing.

Tiemann is directed to a video block system.

Widergrin is directed to a video compression system  
Merely finding disconnected bits-and-pieces in the prior art is insufficient.

The Examiner has not properly established how such diverse references can be combined. See Amgen, Inc. v. Chuqai Pharmaceutical Co., Ltd., 927 F.2d 1200, 18 USPQ2d 1016 (Fed. Cir. 1991).

When the patented invention is made by combining known components to achieve a new system, the prior art must provide a suggestion or motivation to make such a

combination. Heidelberger Druckmaschinen AG v. Hantscho Commercial Products Inc., 21 F.3d 1068, 30 USPQ2d 1377 (Fed. Cir. 1994).

In an appeal in an ancestor application Hyatt '355,<sup>6</sup> Judge Barrett clarified the requirement for motivation:

[T]hat a fact may be well known ... does not itself provide the motivation for the combination.

The art rejections herein are similar to the art rejections in the appeal in this Hyatt '355 application<sup>7</sup> where the art rejections were all reversed.

As in the instant appeal, the examiner in Hyatt-'355 relied on improper hindsight to support § 103 rejections. Thus, the Board reversed all of the § 103 rejections in Hyatt-'355:

The examiner fails to show a suggestion of the limitations in the prior art. "Obviousness may not be suggested using hindsight or in view of the teachings or suggestions of the inventor." Para-Ordnance Mfg. v. SGS Importers Int'l, 73 F.3d 1085, 1087, 37 USPQ2d 1237, 1239 (Fed. Cir. 1995) (citing W.L. Gore & Assocs., Inc. v. Garlock, Inc., 721 F.2d 1540, 1551, 1553, 220 USPQ 303, 311, 312-13 (Fed. Cir. 1983)). "It is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious." In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992) (citing In re Gorman, 933 F.2d 982, 987, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991)). "[T]he question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination." In re Beattie, 974 F.2d 1309, 1311-12, 24 USPQ2d 1040, 1042 (Fed. Cir. 1992) (quoting Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co., 730 F.2d 1452, 1462, 221 USPQ 481, 488 (Fed. Cir. 1984)).

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Although Hobrough teaches "automatic registration of photographic images," col. 3, ll. 49-50, the examiner fails

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6. Ex parte Hyatt, Appeal No. 1994-3042, Paper No. 39 at 36 in patent application Serial No. 07/289,355 (PTO Bd. App. December 21, 2000) [herein Hyatt-'355] (unpublished PTO decision).

7. Ex parte Hyatt, Appeal No. 1994-3042, Paper No. 39 in patent application Serial No. 07/289,355 (PTO Bd. App. December 21, 2000) [herein Hyatt-'355] (unpublished PTO decision).

to identify a sufficient suggestion to add the automatic registration of Hobrough to the system of Hemstreet. There is no evidence that the sample and the patterns to be compared in Hemstreet are misregistered so as to benefit from registration.

\* \* \*

... the examiner fails to allege, let alone show, that the reference cures the deficiency of Hemstreet and Hobrough.

Hyatt-'355 at 27-29.

## 1.2 35 USC 102 Rejections

The Applicant respectfully traverses the 35 USC 102 rejections for the reasons of record, for the additional reasons below, and for the additional reasons discussed above.

The reference relied on for the § 102 rejections do not provide the identity necessary to support the § 102 rejections. As discussed above:

Jain is directed to estimating block displacement.

The 35 USC 102 rejection does not establish a prima facie case. For example, the Federal Circuit **requires** that a '102 rejection must be supported on a limitation by limitation basis with specific fact findings for each contested limitation and satisfactory explanations for such findings. Claim construction must also be explicit. Gechter v. Davidson, 43 USPQ2d 1031 at 1035.

Further, under 35 USC 102, every limitation of a claim must identically appear in a single prior art reference for it to anticipate the claim. In re Bond, 910 F.2d 831, 832, 15 USPQ2d 1566, 1567 (Fed. Cir. 1990) as cited in Gechter v. Davidson, 43 USPQ2d 1031 at 1032.

The law requires **identity** between the rejected claims and the references for a 35 USC 102 rejection; as discussed below. However, the rejection does not establish this identity. This is not surprising, there is no such identity. The claims have features that distinguish over the references.

A party asserting that a patent claim is anticipated under 35 USC 102 must demonstrate, among other things, identity of invention. Kalman v. Kimberly-Clark Corp., 713 F.2d 760, 771, 218 USPQ 781, 789 (Fed. Cir. 1983), cert. denied, 465 U.S. 1026 [224 USPQ 520] (1984), overruled in part on another ground, SRI Int'l v. Matsushita Elec. Corp. of Am., 775 F.2d 1107, 1125, 227 USPQ 577, 588-89 (Fed. Cir. 1985) (in banc). Identity of invention is a question of fact, and one who seeks such a finding must show that each element of the claim in issue is found, either expressly or under principles of inherency, in a single prior art reference, or that the claimed invention was previously known or embodied in a single prior art device or practice. Minnesota Mining and Manufacturing v. Johnson & Johnson, 976 F.2d 1559, 24 USPQ2d 1321 (Fed. Cir. 1992)

Rejection for anticipation or lack of novelty requires, as the first step in the inquiry, that all the elements of the claimed invention be described in a single reference. Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir.), cert. denied, 110 S.Ct. 154 (1989). Further, the reference must describe the applicant's claimed invention sufficiently to have placed a person of ordinary skill in the field of the invention in possession of it. In re Spada, 911 F.2d 705, 15 USPQ2d 1655 (Fed. Cir. 1990)

An anticipation analysis must be conducted on a limitation by limitation basis, with specific fact findings for each contested limitation and satisfactory explanations for such findings. Claim construction must also be explicit. Anticipation requires that every limitation in the claim was identically shown in a single reference. Gechter v. Davidson, 116 F.3d 1454, 43 USPQ2d 1031 at 1035 (Fed. Cir. 1997)

The Examiner alleges correspondence between claimed elements and elements shown in the reference. However, allegations of correspondence between claimed elements is no substitute for a proper showing of identity.

The rejection relies on bits and pieces found in the prior art. However, the finding of bits and pieces of the claimed

invention does not establish anticipation.

"Only god works from nothing. Man must work with old elements." (65 J.Pat.Off.Soc'y 331; Howard T. Markey; Chief Judge; Court of Appeals for the Federal Circuit).

Just because the elements existed does not mean that they are combined in the claimed manner or that they cooperate in the claimed manner.

Other case law further illustrates the deficiencies in the 35 USC 102 rejection.

Anticipation under 35 U.S.C.A. paragraph 102 can be found only when reference discloses exactly what is claimed. Titanium Metals Corp. of America v. Banner, 778 F.2d 775. (C.A. Fed. DC 1985).

"7. The prior art relied on by plaintiff does not constitute an anticipation of claims 18, 19 and 20 of the Wollard patent under 35 U.S.C. paragraph 102. Anticipation can exist only where a single prior art reference teaches the same elements as claimed, united in the same way to perform an identical function. Illinois Tool Works, Inc. v. Sweetheart Plastics, Inc., 436 F.2d 1180, 168 USPQ 451 (7th Cir. 1971); McCullough Tool Co. v. Wells Survey, Inc., 343 F.2d 381, 398, 145 USPQ 6, 19-20 (10th Cir. 1965); cert. denied 383 U.S. 933, 148 USPQ 772 (1966)." Penn Yan Boats, Inc. v. Sea Lark Boats, Inc., 175 USPQ 260, 273 (S.D.Fla 1972).

The Federal Circuit has established that the party asserting anticipation (in the present case, the patent examiner) demonstrate the identity between the claimed invention and the reference by showing that each element of the claim was either expressly or inherently described in a single prior art reference or that the claimed invention was known previously or encompassed in a single prior art device or practice. See Kalman v. Kimberly-Clark Corp., 713 F.2d 771, 218 USPQ 789 (Fed.Cir 1983). The Federal Circuit confirmed this standard of anticipation in In re Donohue, 766 F.2d 531, 533, 226 USPQ 619, 621 (Fed.Cir. 1985) and Ralston Purina Co. v. Far-Mar-Co, Inc., 772 F.2d 1570, 1574, 227 USPQ 177, 180 (Fed.Cir. 1985).

## II. 35 USC 112-1 REJECTIONS

The Applicant respectfully traverses the 35 USC 112-1 rejections for the reasons of record and for the additional reasons below.

### 2.1 The Examiner Did Not Even Get Started On His § 112-1 Examination According To The Courts And The PTO

The Examiner did not even get started on his § 112-1 examination according to the courts and the PTO.

According to the PTO, the starting point must be the working example and the Examiner "must" then "extrapolate" from the working example "across the entire scope of the claims" (see below). However, the Examiner did not even consider the Applicant's working examples (discussed herein). Hence, the Examiner could not possibly have started with the working examples as required and he certainly could not have extrapolated from the working example "across the entire scope of the claims" as further required. See MPEP 2164.02:

To make a valid rejection, one must evaluate all the facts and evidence and state why one would not expect to be able to extrapolate that one example across the entire scope of the claims.

The PTO position is supported by the courts.<sup>8</sup> The starting point (the "outset") in this case is the instant disclosure, including the disclosed actually reduced-to-practice "Experimental System". From this starting point, the Examiner "must" establish "some technical uncertainty". However, as discussed above, the Examiner never got to the starting point,

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8. Norwest Corporation and Subsidiaries v. Commissioner of Internal Revenue, 110 TC 454, 507-508 (1998); WICOR, Inc., and Subsidiaries v. United States, 116 F. Supp. 2d 1028, 1035-36 (E.D. Wis. 2000); United Stationers, Inc. v. United States, 163 F.3d 440, 445-46 (7th Cir. 1998).

never properly evaluated the disclosed actually reduced-to-practice "Experimental System", and never established any "technical uncertainty" starting with the disclosed actually reduced-to-practice "Experimental System".

The court in United Stationers stated:

H.R. Conf. Rep. No. 99-841, at II-72 (1986).... The Report suggests that qualifying research must from its outset involve some technical uncertainty about the possibility of developing the product. See *Norwest*, 1998 U.S. Tax Ct. LEXIS 32, P 52,758, at 4655 (discussing the "required uncertainty"); cf. *TSR*, 96 T.C. at 920-21.

163 F.3d at 446 (emphasis added). However, the Examiner has not established "some technical uncertainty about the possibility of developing the product" -- which is the making or using of the invention. This is not surprising -- what could the Examiner say about a technical uncertainty of making or using software, or making and using a memory, or purchasing a display monitor particularly when the disclosed actually reduced-to-practice "Experimental System" had already been developed and was the starting point -- the "outset".

According to the Federal Circuit, the starting point must also include construing the claims, but the Examiner has not construed the claims. For example, in Gechter, Judge Michel clarified claim construction:

Implicit in our review of the Board's anticipation analysis [and any other patentability analysis] is that the claim must first have been correctly construed to define the scope and meaning of each contested limitation.

Gechter at 1032.

In view of the above, the Examiner did not even get started on his § 112-1 examination.



2.2     The Description More Than Satisfies  
          The Law On Written Description

Written description involves whether each contested claim limitation can be found in the disclosure:<sup>9</sup>

In order to satisfy the written description requirement ... one skilled in the art, reading the original disclosure, must "immediately discern the limitation at issue" in the claims.

Purdue Pharma.<sup>10</sup>

Any time an examiner bases a rejection ... on the lack of a written description, the examiner should: (A) identify the claim limitation not described; and (B) provide reasons why persons skilled in the art at the time the application was filed would not have recognized the description of this limitation in the disclosure of the application as filed.

MPEP 2163.04 (emphasis added).

To comply with the written description requirement of 35 U.S.C. 112, ¶ 1 ... each claim limitation must be expressly, implicitly, or inherently supported in the originally filed disclosure.

PTO Guidelines at Section II.A.3.a, (2)b.<sup>11</sup>

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9. The rule for the written description requirement is that it should be reasonably applied and that the disclosure of the claim limitations need not be verbatim, but can be implicit or inherent.

10. Purdue Pharma v. Faulding, 230 F.3d 1320, 56 USPQ2d 1481, 1483 (Fed. Cir. 2000) (emphasis added); see also Waldemar Link GmbH & Co. v. Osteonics Corp., 32 F.3d 556, 558, 31 USPQ2d 1855, 1857 (Fed. Cir. 1994).

11. Guidelines for the Examination of Patent Applications Under the 35 U.S.C. 112, ¶ 1, "Written Description" Requirement; Official Gazette 1242 O.G. 168 (January 30, 2001) (emphasis added).

The CCPA in both Angstadt and Moore held that the written description requirement is relatively simple to comply with:<sup>12</sup>

Two of the first paragraph requirements indicated above, i.e., the "description of the invention" and the "best mode" requirements, are relatively simple to comply with and thus will ordinarily demand minimal concern on the part of the Patent Office \* \* \* What is of maximum concern in any analysis of whether a particular claim is supported by the disclosure in an application is whether that disclosure contains sufficient teaching regarding the subject matter of the claims as to enable one skilled in the pertinent art to make and to use the claimed invention.

However, the Examiner disregarded the CCPA's directive -- that the written description requirement is "relatively simple to comply with and thus will ordinarily demand minimal concern on the part of the Patent Office".

The Federal Circuit confirmed that the only disclosure needed for a firmware embodiment is the "general function of the firmware":

While we agree that the '302 patent only discloses the general function of the firmware without teaching mathematical formulas, flow charts, or a firmware program listing, no more was needed here.

Hayes.<sup>13</sup>

The solicitor's reliance on what this court has referred to as the "description requirement" of the first paragraph of § 112 is misplaced. The so-called "description requirement," which exists in the first paragraph independent of the enablement (how to make and how to use) portions, serves essentially two functions.... Both are fully defeated by a specification, which describes the invention in the same terms as the claims. Here there has

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12. In re Angstadt and Griffin, 537 F.2d 498, 190 USPQ 214, 217 (CCPA 1976).  
In re Moore, 439 F.2d 1232, 169 USPQ 136, 239 (CCPA 1971).

13. In re Hayes Microcomputer Products Inc., 982 F.2d 1527, 25 USPQ2d 1241, 1248 (Fed. Cir. 1992) (emphasis added).

been no assertion by the board or the examiner that there is any lack of correspondence between the appealed claims and the specification (including the original claims) as filed. Indeed the scope of the language of the specification clearly corresponds to the language of the claims, the "polymerizable material" of the claims being referred to variously by the specification as a "polymer" and a "polymerizable mass \* \* \* added \* \* \* as an aqueous solution of monomeric material, such as hexamethylenediamine adipate." (Emphasis supplied.)\* Thus there is no basis for the solicitor's reliance upon the description requirement as support for the rejection here.

Bowen:<sup>14</sup>

The Federal Circuit confirmed that written description can be satisfied with any one of various different methods:

Depending upon the facts of each particular case, one may satisfy the written description requirement using, for example, drawings, tables, equations, and formulas, alone or in combination.

Hunter.<sup>15</sup> The Federal Circuit in Union Oil<sup>16</sup> uses a simple tabular method to illustrate written description.

According to the Deputy Assistant Commissioner for Patent Policy and Projects,<sup>17</sup> electrical applications with detailed drawings meet the written description requirement:

[I]n most applications which include detailed drawings, e.g., most mechanical and electrical applications, the examiner will be able to quickly determine that the written description requirement has been met.

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14. In re Bowen, 492 F.2d 859, 181 USPQ 48, 52 (CCPA 1974) (emphasis added).

15. In re Hunter, No. 94-1301, 1995 U.S. App. LEXIS 15363, at \*14 (Fed. Cir. June 19, 1995) (emphasis added).

16. Union Oil Co. of California v. Atlantic Richfield, 208 F.3d 989, 54 USPQ2d 1227 (Fed. Cir. 2000).

17. Stephen G. Kunin, "Written Description Guidelines and Utility Guidelines," Journal of the Patent and Trademark Office Society (JPTOS), Vol. 82, No. 2 at page 87 (February 2000).

In further support of the above, it is black-letter law that an original claim is its own written description. Hence, written description needs no more detail than the claim limitations. See Purdue and Bowen above.

Where the claim is an original claim, the underlying concept of insuring disclosure as of the filing date is satisfied, and the description requirement has likewise been held to be satisfied.

Smith.<sup>18</sup>

Claim 2, which apparently was an original claim, in itself constituted a description in the original disclosure equivalent in scope and identical in language to the total subject matter now being claimed. See *In re Anderson*, 471 F.2d 1237, 176 USPQ 331 (CCPA 1973). Nothing more is necessary for compliance with the description requirement of the first paragraph of 35 U.S.C. 112.

Gardner.<sup>19</sup>

Similarly, the ITC held that disputed "claim language" found in an original claim satisfies written description. The ITC also held that original claims can be considered in "part":

The ALJ found claim 9 of the '838 patent invalid under 35 U.S.C. § 112 as not meeting the written description and claim precision requirements because claim 9 calls for "jaws which grip the fastener at opposite ends," but the specification and drawings show gripping at one end. Since the claim language questioned is part of original claim 9, it is its own description, and there is no failure to meet the written description requirement. We also find that claim 9 is not indefinite.

Plastic Fasteners.<sup>20</sup>

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18. *In re Smith*, 481 F.2d 910, 178 USPQ 620, 624 (CCPA 1973).

19. *In re Gardner*, 475 F.2d 1389, 177 USPQ 396, 397 (CCPA 1973).

20. *In re Certain Plastic Fasteners and Processes for the Manufacture Thereof*, 1987 ITC Lexis 271 (on Petition For Review) (emphasis added).

It is also black-letter law that a claim defines the "boundary" of the claimed invention and is not a detailed technical description.

The purpose of claims is not to explain the technology or how it works, but to state the legal boundaries of the patent grant.

S3 Inc..<sup>21</sup>

A claim is a group of words defining only the boundary of the patent [property].

Buehler.<sup>22</sup>

A claim is a group of words defining only the boundary of the patent monopoly. It may not describe any physical thing and indeed may encompass physical things not yet dreamed of.

Vogel.<sup>23</sup>

Distinguishing what infringes from what doesn't is the role of the claims....

Gore.<sup>24</sup>

Hence, because an original claim is its own written description and because a claim defines a "boundary" of an invention, written description requires no more.

Despite the fact that written description does not require any more than antecedent basis for the claim limitations (e.g., an original claim is its own written description), written description does not even require disclosure of the same words as

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21. See S3 Inc. v. nVIDIA Corp., 259 F.3d 1364, 59 USPQ2d 1745, 1748 (Fed. Cir. 2001).

22. In re Buehler, 515 F.2d 1134, 185 USPQ 781, 787 (CCPA 1975).

23. In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

24. W. L. Gore & Associates, Inc., v. Garlock, Inc., 721 F.2d 1540, 1557 (Fed. Cir. 1983).

the claim limitations -- it is adequate for the antecedent basis to be express, implicit, or inherent in the disclosure.

While there is no in haec verba requirement, newly added claim limitations must be supported in the specification through express, implicit, or inherent disclosure.

PTO Guidelines at Section I.B.<sup>25</sup>

**2163.02 Standard for Determining Compliance With the Written Description Requirement \* \* \***

The subject matter of the claim need not be described literally (i.e., using the same terms or in haec verba) in order for the disclosure to satisfy the description requirement.

MPEP 2163.02.

Where the language of the claims is descriptively supported either in a drawing or, for example, as the cumulative effect of numerous specific embodiments described in the application, it is not necessary that the specific language used as a definition in the claim also be used in the specification as originally filed.

Kayton.<sup>26</sup>

The function of the description requirement is to ensure that the inventor had possession of, as of the filing date of the application relied upon, the specific subject matter later claimed by him; how the specification accomplishes this is not material. In re Smith, 481 F.2d 910, 178 USPQ 620 (CCPA 1973). The claimed subject matter need not be described in haec verba to satisfy the description requirement. In re Smith, 59 CCPA 1025, 458 F.2d 1389, 173 USPQ 679 (CCPA 1972). It is not necessary that the application describe the claim limitations exactly, but only so clearly that one having ordinary skill in the pertinent art would recognize from the disclosure that appellants invented processes including those limitations. In re Smythe, 480 F.2d 1376, 178 USPQ 279 (CCPA 1973).

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25. Guidelines for the Examination of Patent Applications Under the 35 U.S.C. 112, ¶ 1, "Written Description" Requirement; Official Gazette 1242 O.G. 168 (January 30, 2001).

26. Kayton, I., Patent Practice, Fifth Edition, Vol. 3, Chapter 11, page 92 (Patent Resources Institute, 1993).

Herschler.<sup>27</sup> Notwithstanding the fact that the disclosure has extensive support for the claimed invention, such support is not even required for written description:

Compliance with the written description requirement of Section 112 only requires that appellant's application contain sufficient disclosure, **expressly or inherently**, to make it clear to persons skilled in the art that appellant possessed the subject matter claimed. In re Mott, 539 F.2d 1291, 190 USPQ 536, 541 (CCPA 1976). The test for determining compliance with the written description requirement is whether the disclosure of the application as originally filed **reasonably** conveys to the artisan that the inventor had possession of **the claimed subject matter**, rather than the presence or absence of literal support in the specification for the claim language. In re Kaslow, 707 F.2d 1366, 217 USPQ 1089, 1096 (Fed. Cir. 1983).

Harvey.<sup>28</sup>

The Federal Circuit in Union Oil<sup>29</sup> cited to Vas-Cath with approval stating (emphasis added):

However, neither the Patent Act nor the case law of this court requires such detailed disclosure. See ... Vas-Cath, 935 F.2d at 1566 ("ranges found in applicant's claims need not correspond exactly to those disclosed in [the specification]; **issue is whether one skilled in the art could derive the claimed ranges from the [disclosure]**.")

The court then quoted this Vas-Cath statement yet a second time. See Union Oil at 1235.

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27. In re Herschler, 591 F.2d 693, 700-01, 200 USPQ 711, 717 (CCPA 1979) (emphasis added).

28. Ex Parte Harvey, 3 USPQ2d 1626, 1627 (Bd. Pat. App. and Int. 1986) (emphasis added).

29. Union Oil Co. of California v. Atlantic Richfield, 208 F.3d 989, 54 USPQ2d 1227, 1233 (Fed. Cir. 2000).

Judge Stewart in Hyatt-'211<sup>30</sup> (emphasis added) stated:

We have considered, in detail, the language objected to by the examiner, but find the language to be reasonably descriptive of the invention.... Accordingly, we will not sustain the rejection.

Thus, the written description requirement must be reasonably applied.

The PTO Guidelines<sup>31</sup> confirm the relevance of reduction-to-practice to written description:

Possession may be shown in a variety of ways including description of an actual reduction to practice ....

However, the rejections do not properly address the disclosed actually reduced-to-practice "Experimental System". When the Applicant has gone through all of the effort and expense to actually reduce-to-practice and to disclose in detail an embodiment, the Examiner is required to consider this very compelling evidence. The Examiner must consider the disclosure as a whole "taking into account evidence that ... detracts from an agency's decision".

The [U.S. Supreme] Court has emphasized that "substantial evidence" review involves examination of the record as a whole, taking into account evidence that both justifies and detracts from an agency's decision. See Universal Camera Corp. v. NLRB, 340 U.S. 474, 487-88 (1951).

Gartside.<sup>32</sup>

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30. Ex parte Hyatt, Appeal No. 91-2061, Paper No. 28 at 9 in patent application Serial No. 07/662,211 (PTO Bd. App. December 20, 1991) [herein Hyatt-'211] (unpublished PTO decision).

31. Guidelines for Examination of Patent Applications Under the 35 USC 112, § 1, 'Written Description' Requirement; Official Gazette at 1242 OG 168, 172 (January 30, 2001).

32. In re Gartside, 53 USPQ2d 1769, 1773 (Fed. Cir. 2000).



In summary, the written description requirement is "relatively simple to comply with and thus will ordinarily demand minimal concern on the part of the Patent Office".

### 2.3 The Federal Circuit Analyzes Written Description On An Individual Limitation-By-Limitation Basis In Simple Tabular Form

The Federal Circuit analyzes written description on an individual claim limitation by claim limitation basis in a simple tabular form (see table below). See Union Oil.<sup>33</sup> See also Hunter.<sup>34</sup>

Depending upon the facts of each particular case, one may satisfy the written description requirement using, for example, drawings, tables, equations, and formulas, alone or in combination.

This tabular form was generated by the court in Union Oil:

To reiterate, this court supplies the written description supporting another claim, claim 125 as follows:

What follows this statement is another table of the type shown below.

The Federal Circuit even cites to an important limitation from an original claim and combines it with other limitations excerpted from the body of the patent (see table below). It is particularly noteworthy that this original claim was previously canceled and is not in the patent.<sup>35</sup>

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33. Union Oil Co. of California v. Atlantic Richfield, 208 F.3d 989, 54 USPQ2d 1227, 1233 (Fed. Cir. 2000).

34. In re Hunter, No. 94-1301, 1995 U.S. App. LEXIS 15363, at \*14 (Fed. Cir. June 19, 1995) (emphasis added).

35. This may be considered to be the intermixing of citations to two separate documents, the original application containing the original claim and the patent to which the other citations are made.

The instant disclosure has hundreds of occurrences of claim limitations and has extensive enabling disclosures of these claim limitations. This is far more than the tables in Union Oil citing to a single recitation in the disclosure for each claim limitation.

Claim limitation	Support in '393 patent
T50 at $\leq 200^{\circ}$	Col. 14, ll. 9-15: "no greater than $210^{\circ}$ F., . . . but preferably less than $210^{\circ}$ F. . . ."
RVP at $\leq 7.0$ psi	Col. 14, ll. 36-40: "Reid Vapor Pressure specification of 8.0 psi . . . even more preferably no greater than 7.0 psi . . ."
Olefin at $< 4.0$ volume percent	Col. 14, ll. 23-30: "varying the olefin content, this value is generally maintained less than 15 volume percent, with decreasing values providing progressively improved results. Thus, it is contemplated that each unit reduction, e.g., to values below . . . 4 . . . providing progressively better results. . . ."
Paraffin at $> 85$ volume percnet [sic]	Col. 14, ll. 49-64: "progressively increasing the paraffin content progressively decreases the CO emitted. Accordingly . . . the paraffin content would be increased to . . . and most preferably of all above 85 volume percent. . . ."
T90 at $\leq 300^{\circ}$	claimed exactly in original claim 29
T10 at $\leq 158^{\circ}$	Col. 5, lls. 6-30: Table 1 shows maximum T10 distillation temperatures for all five volatility classes at 158 or below.

Union Oil at 1233 (footnote omitted).

As discussed above, the Federal Circuit confirmed that written description can be satisfied with a table "alone":

Depending upon the facts of each particular case, one may satisfy the written description requirement using, for

example, drawings, tables, equations, and formulas, alone or in combination.

Hunter.<sup>36</sup> The Federal Circuit in Union Oil uses a simple tabular method to illustrate written description (see above).

#### 2.4 The Claims More Than Satisfy The Law On Enablement

It is black-letter law that the test for enablement is whether there is "undue experimentation" and it is black-letter law that the disclosure can rely on the skill in the art.

The test of enablement is whether one reasonably skilled in the art could make or use the Invention from the disclosures in the patent coupled with information known in the art without undue experimentation.

US v. Teletronics.<sup>37</sup>

The U.S. Supreme Court requires the Examiner to treat knowledge which is common and well known as if it were written out in the patent and delineated in the drawings:

He [an engineer] may begin at the point where his invention begins, and describe what he has made that is new, and what it replaces of the old. **That which is common and well known is as if it were written out in the patent and delineated in the drawings.**

Loom.<sup>38</sup> The Federal Circuit reiterates the law of the U.S. Supreme Court:

Paragraph 1 permits resort to material outside of the specification in order to satisfy the enablement portion of the statute because it makes no sense to encumber the

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36. In re Hunter, No. 94-1301, 1995 U.S. App. LEXIS 15363, at \*14 (Fed. Cir. June 19, 1995) (emphasis added).

37. United States v. Teletronics, Inc., 857 F.2d 778, 785, 8 USPQ2d 1217, 1223 (Fed. Cir. 1988).

38. Loom Co. v. Higgins, 105 U.S. 580, 585 (1881) (emphasis added).

specification of a patent with all the knowledge of the past concerning how to make and use the claimed invention. One skilled in the art knows how to make and use a bolt, a wheel, a gear, a transistor, or a known chemical starting material. The specification would be of enormous and unnecessary length if one had to literally reinvent and describe the wheel.

Atmel.<sup>39</sup>

The Federal Circuit requires the Examiner to consider the disclosure as a whole in order to evaluate enablement.

Thus, the examiner and the board effectively ignored statement [D] and the rest of the disclosure. This was error because the specification disclosure as a whole must be considered. *In re Moore, supra*.

The PTO not having carried its burden of establishing lack of enablement, this rejection of claim 14 under § 112, first paragraph, is reversed.

Hogan.<sup>40</sup> However, the Examiner has not considered the disclosure as a whole.

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39. Atmel Corp. v. Info. Storage Devices, Inc., 198 F.3d 1374, 53 USPQ2d 1225, 1230 (Fed. Cir. 1999) (emphasis added).

40. In re Hogan, 559 F.2d 595, 194 USPQ 527, 539 (CCPA 1977).

2.5     The Extensively Disclosed Actually Reduced-To-Practice  
          "Experimental System"

The Abstract prominently identifies the "experimental system" and states that it "is disclosed in detail" (emphasis added).

ABSTRACT

An improved image processing architecture is provided having advantages of increased speed, lower cost, extensive features and efficiency of implementation.... An experimental system that demonstrates many of the improved features has been constructed and is disclosed in detail.

The disclosure has more than 40 recitations of the term experimental system and terms related thereto.

The disclosure has more than 30 sheets of figures directed to the actually reduced-to-practice "Experimental System" (e.g., Figs. 6A-6AH).

The disclosure has more than 200 pages of description directed to the actually reduced-to-practice "Experimental System" (e.g., Spec. at 240-373 and 503-574).

The disclosure titles prominently emphasize the actually reduced-to-practice "Experimental System".



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The hardware and software of the actually reduced-to-practice "Experimental System" is summarized in the disclosure.

EXPERIMENTAL CONFIGURATION FEATURES TABLE

Real time operation  
Medium resolution (260,000-pixels per frame)  
Dynamic updates at the field rate (60-times per second)  
Interactive operation  
Joysticks and computer commands  
X-axis translation  
Y-axis translation  
Rotation  
Expansion and compression  
Instantaneous response  
Simultaneous motion, all controls  
Geometric processing  
Rotation  
Continuous  
Resolution: 0.2-degrees  
360-degrees/sec max rate  
Software limited  
Expandable  
Translation  
Continuous  
Resolution: 1-pixel  
1000-pixels/second max rate  
Software limited  
Expandable  
Expansion/compression  
Continuous  
Fractional (non-integer)  
Resolution: 1-pixel  
Double/half size per second max rate  
Software stops  
Expandable  
Monitor  
Barco color monitor.  
Blanked to 484-lines and about 700-pixels/line  
3-colors, RGB  
13-inch CRT  
Inline gun shadow mask  
Image memory  
512-pixels by 512-pixels  
7-bits per pixel  
2-bits red  
2-bits blue  
3-bits green  
200-ns RAMs

- Spatial filtering
  - 9-pixel kernel at 10-million kernels/sec
  - Weight RAM
- Virtual scrolling
  - Image memory wrap-around
- Supervisory computer
  - 8085 8-bit microcomputer
  - CP/M-80 operating system
  - Compiled Basic

Spec. at 33.

Many other disclosure sections and the figures discussed therein teach features of the actually reduced-to-practice "Experimental System". For example, the following sections supplement the above table of contents quotations with theory, analysis, and documentation related to the disclosed actually reduced-to-practice "Experimental System".

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## 2.6     The Examiner Has Not Established That Any Experimentation Would Be Required In View Of The Actually Reduced-To-Practice "Experimental System"

### 2.6.1   Introduction

Enablement is established, as here, when there is no "undue experimentation".

The test of enablement is whether one reasonably skilled in the art could make or use the Invention from the disclosures in the patent coupled with information known in the art without undue experimentation.

Telectronics.<sup>41</sup> The PTO confirms that "experimentation" is the standard for enablement. MPEP 2164.01.

The standard for determining whether the specification meets the enablement requirement was cast in the Supreme Court decision of *Mineral Separation v. Hyde*, 242 U.S. 261, 270 (1916) which postured the question: is the experimentation needed to practice the invention undue or unreasonable? That standard is still the one to be applied. *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988). Accordingly, even though the statute does not use the term "undue experimentation." It has been interpreted to require that the claimed invention be enabled so that any person skilled in the art can make and use the invention without undue experimentation. *In re Wands*, 858 F.2d at 737, 8 USPQ2d at 1404 (Fed. Cir. 1988). See also *United States v. Telectronics, Inc.*, 857 F.2d 778, 785, 8 USPQ2d 1217, 1223 (Fed. Cir. 1988) ("The

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41. United States v. Telectronics, Inc., 857 F.2d 778, 785, 8 USPQ2d 1217, 1223 (Fed. Cir. 1988).

test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation.")

Hence, if there is no undue experimentation, enablement is established.

The nature of experimentation is articulated in Norwest, WICOR, and United Stationers,<sup>42</sup> as discussed below. Simply stated, experimentation involves technical uncertainty about the possibility of developing a system from the start of the project (the filing of the ancestor application). These authorities establish that software development is routine and does not involve experimentation unless it satisfies certain legal requirements. However, in the present case, where an artisan is starting with the disclosed actually reduced-to-practice "Experimental System" and other disclosures, where the rejection does not address uncertainty in making or using the invention, there should be no experimentation and certainly not undue experimentation.

The established test for experimentation is technical "uncertainty from the outset". Simply stated, this means technical uncertainty about the possibility of developing the product from the start of the project. In this case, the start of the project is the instant disclosure including the disclosed actually reduced-to-practice "Experimental System".

The issue here is whether an artisan; starting with the disclosed actually reduced-to-practice "Experimental System", the additional disclosure in the instant application, and the skill in the art; would be enabled to make and use the claimed invention. This starting point is the "outset". The test is whether an artisan making and using the claimed invention in this

---

42. Norwest Corporation and Subsidiaries v. Commissioner of Internal Revenue, 110 TC 454, 507-508 (1998); WICOR, Inc., and Subsidiaries v. United States, 116 F. Supp. 2d 1028, 1035-36 (E.D. Wis. 2000); United Stationers, Inc. v. United States, 163 F.3d 440, 445-46 (7th Cir. 1998).

environment would be "uncertain at the outset."

The conclusion must be that, "at the outset", it was not uncertain that an artisan would be enabled to make and use the claimed invention. Starting with the disclosed actually reduced-to-practice "Experimental System", the additional disclosures in the instant application, and the skill in the art; an artisan would have been enabled to make and use the claimed invention.

#### 2.6.2 The Established Law On Experimentation

The established law on the nature of experimentation is articulated by Norwest, WICOR, and United Stationers<sup>43</sup> -- technical uncertainty about the possibility of developing the product from its outset.

The court in WICOR stated:

The government responds that the WICOR project did not involve developing a new computer system in which the design was uncertain at the outset.

The plaintiff failed to present evidence that the means for achieving the final result of the WICOR project were uncertain at the outset.

116 F. Supp. 2d at 1035.

The plaintiff failed to present evidence that the means for achieving the final result of the WICOR project were uncertain at the outset. For example, Paul Kowalski, the WICOR credit team leader, testified that the WICOR project team followed a tried and true data processing approach -- the DB-2 system. Perhaps most telling is Kowalski's acknowledgment that the data processing system utilized by WICOR was not new, although it was new to WICOR (Kowalski Dep. at pp. 28-29). However, a method does not constitute a process of experimentation simply because the method is experimental to a specific taxpayer. Rather, the method must be experimental to the relevant field -- in this

---

43. Norwest Corporation and Subsidiaries v. Commissioner of Internal Revenue, 110 TC 454, 507-508 (1998); WICOR, Inc., and Subsidiaries v. United States, 116 F. Supp. 2d 1028, 1035-36 (E.D. Wis. 2000); United Stationers, Inc. v. United States, 163 F.3d 440, 445-46 (7th Cir. 1998).

case, computer science. Kowalski's testimony belies the plaintiff's assertion that the WICOR project was experimental to the field of computer science.

116 F. Supp. 2d at 1035-36.

The court is persuaded by the testimony offered by the government's experts -- Dr. Srivastava and Thomas Niccum -- that the project did not involve identification of models or theories of computer science using a process of experimentation and that there was not a systematic research-oriented process by which data was collected for analysis of competing hypotheses. Although WICOR developed "lessons learned" reports, these reports were informal and only identified miscellaneous programming errors. The court concludes that the WICOR project did not constitute a process of experimentation.

116 F. Supp. 2d at 1036.

According to USI's dictionary, an experiment is "... a test, trial, or tentative procedure, an act or operation for the purpose of discovering something unknown or of testing a principle, supposition, etc." Appellant's Br. at 23 (citing Random House College Dictionary 465 (rev. ed. 1984)).

163 F.3d at 445 (alteration in original).

The legislative history of § 41(d)(1)(C) bolsters this conclusion. The Conference Report explains the meaning of the process of experimentation test: The term process of experimentation means a process involving the evaluation of more than one alternative designed to achieve a result where the means of achieving that result is uncertain at the outset. This may involve developing one or more hypotheses, testing and analyzing those hypotheses (through, for example, modeling or simulation), and refining and discarding the hypotheses as part of a sequential design process to develop the overall component.

Thus, for example, costs of developing a new or improved business component are not eligible for the credit if the method of reaching the desired objective (the new or improved product characteristics) is readily discernible and applicable as of the beginning of the research activities, so that true experimentation in the scientific or laboratory sense would not have to be undertaken to develop, test, and choose among viable alternatives . . . . Engineers who design a new computer system, or who design improved or new integrated circuits

:  
:  
for use in computer or other electronic products, are engaged in qualified research because the design of those items is uncertain at the outset and can only be determined through a process of experimentation relating to specific design hypotheses and decisions as described above.

163 F.3d at 445-46 (alteration in original).

H.R. Conf. Rep. No. 99-841, at II-72 (1986).... The Report suggests that qualifying research must from its outset involve some technical uncertainty about the possibility of developing the product. See *Norwest*, 1998 U.S. Tax Ct. LEXIS 32, P 52,758, at 4655 (discussing the "required uncertainty"); cf. *TSR*, 96 T.C. at 920-21.

163 F.3d at 446.

None of the summaries, however, describes any technical uncertainty about actually developing the programs. Compare *Norwest*, 1998 U.S. Tax Ct. LEXIS 32, P 52,758, at 4670 (programming project did not constitute qualified research because, in part, it did not involve technical risk). Nor were there any doubts about the ability of computers to perform the invoicing, billing and marketing tasks. That is, there was simply no technical uncertainty from the outset. We therefore conclude that USI's development of the eight programs did not involve a process of experimentation and that the district court did not clearly err in concluding that the projects did not involve the level of uncertainty necessary to clear this hurdle.

163 F.3d at 446.

#### D. THE PROCESS OF EXPERIMENTATION TEST

The process of experimentation test requires that substantially all of the activities which constitute elements of a process of experimentation relate to a new or improved function, performance, reliability, or quality. The process of experimentation test, which is referenced in the discovery test, is explained by Congress as follows:

The term process of experimentation means a process involving the evaluation of more than one alternative designed to achieve a result where the means of achieving that result is uncertain at the outset. This may involve developing one or more hypotheses, testing and analyzing those hypotheses (through, for example, modeling or simulation), and refining or discarding the hypotheses as part of a sequential design process to develop the overall component.

110 T.C. at 495-96.

Thus, for example, costs of developing a new or improved business component are not eligible for the credit if the method of reaching the desired objective (the new or improved product characteristics) is readily discernible and applicable as of the beginning of the research activities, so that true experimentation in the scientific or laboratory sense would not have to be undertaken to develop, test, and choose among the viable alternatives.

110 T.C. at 496.

Unlike the regulations under section 174, which are silent about the means of discovering information, the conference report accompanying the TRA 1986 made it clear that a more structured method of discovery is required with respect to section 41. By requiring that at the outset uncertainty exist about the ability to develop the product in the scientific or laboratory sense, the process of experimentation test is aimed at eliminating uncertainty about the TECHNICAL ability to develop the product -- as opposed to uncertainty as to whether the product can be developed within certain business or economic constraints, even though the taxpayer knew that it was technically possible to develop it.

110 T.C. at 496.

As evidence of the required uncertainty, Congress mandated the evaluation of more than one alternative, which in turn may require the use of a structured process of experimentation through the continuous development of hypotheses that require testing and analysis until the method for reaching the objective is discovered. Congress did not specify that any particular number of hypotheses be developed by the taxpayer, but the more hypotheses that are developed, tested, and analyzed, the more likely the project will satisfy the process of experimentation test.

110 T.C. at 496.

This test also requires that "substantially all" of the activities constitute elements of a process of experimentation. This requirement raises two questions: (1) What does the term "substantially all" mean? and (2) what activities come within the elements of a process of experimentation? ....

We agree with respondent and hold that in the context of section 41, the term "substantially all" refers to at

least 80 percent of the activities that constitute elements of a process of experimentation. This interpretation is consistent with the existing definition of "substantially all" in the regulations under section 41 with respect to qualified wages.

110 T.C. at 497.

Congress indicated in the conference report accompanying the TRA 1986 those elements which constitute a process of experimentation. They include the developing, testing, and analyzing of hypotheses. They do not include activities performed after commercial production or implementation or otherwise set forth in section 41(d)(4). See H. Conf. Rept. 99-841 (Vol. II), supra at II- 72, 1986-3 C.B. (Vol. 4 ) at 72. However, in the case of internal use software, exceptions are made for the modifications of commercially available software. See *infra*.

Thus, at least 80 percent of the activities engaged in by a taxpayer with respect to the preproduction or implementation development of a product must involve the development, testing, and analysis of hypotheses that are designed to eliminate technical uncertainty as to the development of that product. This then raises the issue of which activities in a project are to be examined together and which are to be examined separately for purposes of section 41.

110 T.C. at 497.

In that regard, the court found that the taxpayer did not expand or refine existing principles of computer science, stating: "Rather, Stationers merely applied, modified, and at most, built upon, pre-existing, technological information already supplied to it. This is a far-cry from what Congress contemplated when it spoke of research directed at the 'principles of computer science'." 982 *F.Supp.* at 1284.

110 T.C. at 502.



### 2.6.3 The Electronics And Programming Arts Are Very Predictable

It is black-letter law that the electronics and programming arts are very predictable as of the effective filing date. See the law cited below.

As we explained in *In re Fisher*, 57 CCPA at 1108, 427 F.2d at 839, 166 USPQ at 24:

In cases involving predictable factors, such as mechanical or electrical elements, a single embodiment provides broad enablement in the sense that, once imagined, other embodiments can be made without difficulty and their performance characteristics predicted by resort to known scientific laws. In cases involving unpredictable factors, such as most chemical reactions and physiological activity, the scope of enablement obviously varies inversely with the degree of unpredictability of the factors involved.

Bowen.<sup>44</sup> See also Fisher.<sup>45</sup>

Further with respect to the prima facie case of non-enablement, we note that a single embodiment may provide broad enablement in cases involving predictable factors, such as mechanical or electrical elements.

Hitzemann.<sup>46</sup>

The scope of the required enablement varies inversely with the degree of predictability involved, but even in unpredictable arts, a disclosure of every operable species is not required. A single embodiment may provide broad enablement in cases involving predictable factors, such as mechanical or electrical elements. *In re Vickers*, 141 F.2d 522, 526-27, 61 USPQ 122, 127 (CCPA 1944); *In re Cook*, 439 F.2d 730, 734, 169 USPQ 298, 301 (CCPA 1971).

MPEP 2164.03 (emphasis added).

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44. In re Bowen, 492 F.2d 859, 181 USPQ 48, 50 (CCPA 1974) (emphasis added).

45. In re Fisher, 427 F.2d 833, 166 USPQ 18, 24 (CCPA 1970).

46. Ex parte Hitzeman, 9 USPQ2d 1821, 1823 (Bd. Pat. App. & Int. 1988) (emphasis added).

The PTO presents its definition for "predictability" in MPEP 2164.03.

The "predictability or lack thereof" in the art refers to the ability of one skilled in the art to extrapolate the disclosed or known results to the claimed invention. If one skilled in the art can readily anticipate the effect of a change within the subject matter to which the claimed invention pertains, then there is predictability in the art.

It is well established that the electronic art is highly predictable (discussed below).

The electrical art is predictable (MPEP 2164.03).

Where, as here, a claimed genus represents a diverse and relatively poorly understood group of microorganisms, the required level of disclosure will be greater than, for example, the disclosure of an invention involving a "predictable" factor such as a mechanical or electrical element.

Vaeck.<sup>47</sup>

The programming art is as predictable as the electrical art:

"[it is a] fundamental and well understood tenet of the computing art [that] ... 'any software process can be transformed into an equivalent hardware process, and any hardware process can be transformed into an equivalent software process.'" See Ed Klingler [sic, Klingman], *Microprocessor Systems Design* 5 (1977). Dr. Rhyne stated that this "dualistic transformation," known as the "hardware-/software" tradeoff, effectively means that the selection of a software pointer for a microprocessor versus a hardware switch to control a microprocessor-based system is simply a matter of design choice. This record evidence shows that one of skill in the art would recognize these alternative systems as interchangeable substitutes.

Overhead Door.<sup>48</sup>

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47. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438, 1445 (Fed. Cir. 1991).

48. Overhead Door v. Chamberlain, 194 F.3d 1261, 52 USPQ2d 1321, 1326 (Fed. Cir. 1999) (emphasis added).

2.6.4 Routine Software Development Does Not Involve  
Experimentation Even Without Considering  
The Actually Reduced-To-Practice "Experimental System"

"[R]outine software development" does not involve experimentation. This is particularly compelling in view of the disclosed actually reduced-to-practice "Experimental System" and other disclosures and the predictability of the programming art.

The U.S. Supreme Court set the stage in Loom:<sup>49</sup>

The specification ... proceeds to describe the mechanism of the invention by a description and reference to drawings ... all which would be incomprehensible to a person unacquainted with looms for weaving pile fabrics, but very plain to one who understood their construction and operation at the date of the patent. A person skilled in the art of constructing or using such looms ... would readily appreciate the meaning of the terms and the character of the improvement described....

When an astronomer reports that a comet is to be seen with the telescope in the constellation of Auriga, in so many hours and minutes of right ascension, it is all Greek to the unskilled in science; but other astronomers will instantly direct their telescopes to the very point in the heavens where the stranger has made his entrance into our system. They understand the language of their brother scientist. If a mechanical engineer invents an improvement on any of the appendages of a steam engine ... he is not obliged, in order to make himself understood, to describe the engine, nor the particular appendage to which the improvement refers, nor its mode of connection with the principle machine. These are already familiar to others skilled in that kind of machinery. He may begin at the point where his invention begins, and describe what he has made that is new, and what it replaces of the old. **That which is common and well known is as if it were written out in the patent and delineated in the drawings.**

Similarly, because computer program knowledge "is common and well known [it] is as if it were written out in the patent and delineated in the drawings."

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49. Loom Co. v. Higgins, 105 U.S. 580, 585 (1881) (emphasis added).

The CCPA in Sherwood then applied this century-old U.S. Supreme Court wisdom to computer programming:

In general, writing a computer program may be a task requiring the most sublime of the inventive faculty or it may require only the droning use of a clerical skill. The difference between the two extremes lies in the creation of mathematical methodology to bridge the gap between the information one starts with (the "input") and the information that is desired (the "output"). If these bridge-gapping tools are disclosed, there would seem to be no cogent reason to require disclosure of the menial tools known to all who practice this art.

Sherwood.<sup>50</sup>

In assessing any computer-related invention, it must be remembered that the programming is done in a computer language. The computer language is not a conjuration of some black art, it is simply a highly structured language. Analogously, if a person were to express a complete thought in German, it would be no trick for a translator to convert that thought into a palpable English form. The thought, thus expressed, might not be worthy of Shakespeare, but it would be understandable to one who uses the English language. Similarly, the conversion of a complete thought (as expressed in English and mathematics, i.e., the known input, the desired output, the mathematical expressions needed and the methods of using those expressions) into the language a machine understands is necessarily a mere clerical function to a skilled programmer.

Sherwood.<sup>51</sup>

Taking into account the expert opinions found in the two affidavits, it would appear that the detailed disclosure of the analog method in combination with the suggestion that a digital method should be used might be more enlightening to one having ordinary skill in the art than the computer listing or flow chart required by the PTO. We view the PTO's requirement as quite formalistic in view of the verbal flow chart provided by appellant in the specification. In any event, the touchstone is the content, not its form.

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50. In Re Sherwood, 613 F.2d 809, 204 USPQ 537, 544 (CCPA 1980).

51. In Re Sherwood, 613 F.2d 809, 204 USPQ 537, 544 n.6 (CCPA 1980).

Sherwood.<sup>52</sup>

The Federal Circuit in Robotic<sup>53</sup> held that software does not have to be disclosed to be enabling, even undisclosed software can be enabling if it is apparent to an artisan or implicit in the disclosure.

The Federal Circuit cited to Sherwood with approval and elaborated on software disclosure regarding written description, enablement, and experimentation -- the disclosure does not need to disclose flow charts or computer source code listings, "a disclosure of the functions of the software" is adequate:

GE argues that the patent fails to disclose two software routines....

As a general rule, where software constitutes part of a best mode of carrying out an invention, description of such a best mode is satisfied by a disclosure of the functions of the software. This is because, normally, writing code for such software is within the skill of the art, not requiring undue experimentation, once its functions have been disclosed. It is well established that what is within the skill of the art need not be disclosed to satisfy the best mode requirement as long as that mode is described. Stating the functions of the best mode software satisfies that description test. We have so held previously and we so hold today. See *In re Hayes Microcomputer Prods., Inc. Patent Litigation*, 982 F.2d 1527, 1537-38, 25 U.S.P.Q. 2D (BNA) 1241, 1248-49 (Fed. Cir. 1992); *In re Sherwood*, 613 F.2d 809, 816-17, 204 U.S.P.Q. (BNA) 537, 544 (CCPA 1980). Thus, flow charts or source code listings are not a requirement for adequately disclosing the functions of software. See *Sherwood*, 613 F.2d at 816-17, 204 U.S.P.Q. (BNA) at 544. Here, substantial evidence supports a finding that the software functions were disclosed sufficiently to satisfy the best mode requirements. See *Hayes*, 982 F.2d at 1537, 25 U.S.P.Q. 2D (BNA) at 1248-49 (stating that there was no best mode violation where the specification failed to disclose a firmware listing or flow charts, but did

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52. *In Re Sherwood*, 613 F.2d 809, 204 USPQ 537, 544-545 n.8 (CCPA 1980).

53. *Robotic Vision Systems, Inc. v. View Engineering Inc.*, 42 USPQ2d 1619, 1622 (Fed. Cir. 1997).

disclose sufficient detail to allow one skilled in the art to develop a firmware listing for implementing the invention).

A finding that the GMB was sufficiently disclosed to satisfy the best mode requirement was also supported by substantial evidence. Fonar's witness testified that the '966 patent provided a description of the function of the GMB with reference to the components within the dotted line in Figure 7 of the '966 patent, reproduced below.

Fonar.<sup>54</sup>

Similar to the CCPA's position in Sherwood (above), the Federal Circuit established that all that was needed to satisfy § 112-1 for a complex claim directed to a microprocessor-based modem was (1) identification of a commercial microprocessor and (2) a brief description of the function to be performed:

Disclosing a microprocessor capable of performing certain functions is sufficient to satisfy the requirement of section 112, first paragraph, when one skilled in the relevant art would understand what is intended and know how to carry it out....

The disclosure sufficiently recites the function of the firmware.... The evidence supports the conclusion that one of ordinary skill in the art would understand how to implement the timing means with a microprocessor without a firmware listing.... The evidence of record supports the conclusion that all that was required for one of ordinary skill in the art to understand what the invention was and how to carry it out was the disclosure of a microprocessor having certain capabilities and the desired functions it was to perform ....

Ven-Tel also focuses on the fact that the heart of the claimed invention of the '302 patent is described only in twenty-seven lines. Certainly no length requirement exists for a disclosure to adequately describe an invention. While some inventions require more disclosure, the adequacy of the description of an invention depends on its content in relation to the particular invention, not its length.

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54. Fonar Corp. v. General Electric Co., 107 F.3d 1543, 41 USPQ2d 1801, 1804-05, (Fed. Cir. 1997) (emphasis added).

Hayes.<sup>55</sup>

While we agree that the '302 patent only discloses the general function of the firmware without teaching mathematical formulas, flow charts, or a firmware program listing, no more was needed here.

Hayes.<sup>56</sup> The instant disclosure describes "the desired functions it was to perform" in significantly more detail than the 27 line description of the Hayes patent and the instant disclosure expressly teaches a dual 8085-8088 microprocessor arrangement in a commercial CompuPro computer system product:

The computer is implemented with various S-100 boards manufactured by CompuPro including the 8085-8088 CPU board, RAM 16 and RAM 17 memory boards, a System Support board, and a pair of Interfacer 2 boards.... These boards are described in detail in the referenced manuals.

Spec. at 297.

The Federal Circuit in Union Oil<sup>57</sup> cited to Hayes and Vas-Cath with approval stating:

Appellant refiners assert that the specification does not describe the exact chemical component of each combination that falls within the range claims of the '393 patent. However, neither the Patent Act nor the case law of this court requires such detailed disclosure. See *In re Hayes Microcomputer Prods., Inc. Patent Litigation*, 982 F.2d 1527, 1533, 25 USPQ2d 1241, 1245 ("[The applicant] does not have to describe exactly the subject matter claimed."); *Vas-Cath*, 935 F.2d at 1566 ("ranges found in applicant's claims need not correspond exactly to those disclosed in [the specification]; issue is whether one skilled in the art could derive the claimed ranges from

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55. *In re Hayes Microcomputer Products Inc.*, 982 F.2d 1527, 25 USPQ2d 1241, 1246 (Fed. Cir. 1992) (footnote omitted, emphasis added).

56. *In re Hayes Microcomputer Products Inc.*, 982 F.2d 1527, 25 USPQ2d 1241, 1248 (Fed. Cir. 1992) (emphasis added).

57. *Union Oil Co. of California v. Atlantic Richfield*, 208 F.3d 989, 54 USPQ2d 1227, 1233 (Fed. Cir. 2000).

the [] disclosure.") Rather, the Patent Act and this court's case law require only sufficient description to show one of skill in the refining art that the inventor possessed the claimed invention at the time of filing.

This statement has even greater relevance to the instant case because the Federal Circuit confirmed that, even in the relatively unpredictable chemical art, a disclosure does not have to describe the exact chemical components of a claim combination. Yet the instant claimed invention is in the highly predictable electrical and programming arts and the instant disclosure does describe claim limitations exactly. Because the unexact chemical disclosure in Union Oil was sufficient for that unpredictable art, then the exact disclosures in the instant application are certainly more than sufficient for the highly predictable electrical and programming arts. This notwithstanding the disclosed actually reduced-to-practice "Experimental System" and the significant other disclosures.

The Federal Circuit in Northern Telecom<sup>58</sup> then further applied the century-old U.S. Supreme Court wisdom (Loom) to computer programming:

Further, experts for both sides testified that an experienced programmer could, without unreasonable effort, write a program to carry out the invention of the '375 patent.

\* \* \*

The great weight of the expert testimony on both sides was that a programmer of reasonable skill could write a satisfactory program with ordinary effort. This requires the conclusion that the programs here involved were, to a skilled programmer, routine.

The instant disclosure even provides source code for computer programs.

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58. Northern Telecom Inc. v. Datapoint Corp., 908 F.2d 931, 15 USPQ2d 1321, 1329-1330, (Fed. Cir. 1990), cert. denied, 498 U.S. 970 (emphasis added).



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Very recently other courts -- Norwest, WICOR, and United Stationers discussed above -- further refine this century-old U.S. Supreme Court wisdom for computer programming:

Dr. Walter Scacchi [plaintiff's expert] distinguished the engineering method from the scientific, empirical, and analytical methods of experimentation.

116 F. Supp. 2d at 1035.

Experimentation involves more than simply debugging a computer program:

The projects fit squarely within this definition, USI claims, because software development involves debugging, a process of testing and correcting computer programs. We find this argument unpersuasive. Debugging programs amounts simply to fine-tuning computer operating instructions. Although we are reluctant to establish bright-line rules -- § 41 cases will always be highly fact-intensive -- we think that a process of experimentation involves something more than simply debugging a computer program. See Norwest, 1998 U.S. Tax. Ct. LEXIS 32, P 52,758, at 4669 (computer programming project did not qualify because it "merely required conducting good coding and eliminating bugs through testing").

United Stationers at 445.

The court in Norwest stated:

It is my [Dr. Davis'] opinion based on the sources provided \* \* \* that the work performed by Norwest involved normal and routine software development. The software produced, in terms of the products and services provided, and the technology used to support it, was all within the then current state of the art in the industrial work of management information systems. None of the documents provided suggest that any of the software developed by Norwest was, among other things, innovative or involved a significant degree of technical risk....

110 T.C. at 507 (second alteration in original).

Dr. Davis described five types of projects associated with software development: (1) Design and implementation (the de novo creation of a body of software); (2) installation and testing (the purchase and installation of software from a vendor); (3) maintenance (ongoing adjustments to the code); (4) enhancement (adding of functionality to the program); and (5) research (attempting to do something for the first time)....

110 T.C. at 507.

Dr. Davis stated that routine software development must be distinguished from software research efforts. He contended that software research is characterized by the search for information (as opposed to the production of code) n46 [FN 46: Dr. Davis dismissed Norwest's activities as not qualified research because Norwest produced operational software and not information about principles.] ....

110 T.C. at 507.

**2.6.5 The Federal Circuit Held That Software Does Not Have To Be Disclosed To Be Enabling, Even Undisclosed Software Can Be Enabling If It Is Apparent Or Implicit In The Disclosure**

The Federal Circuit in Robotic<sup>59</sup> held that software does not have to be disclosed to be enabling, even undisclosed software can be enabling if it is apparent to an artisan or implicit in the disclosure. In fact, in Robotic the Federal Circuit held that "software" did not even have to be mentioned to provide an enabling best mode:

[2] On the other hand, the inventors in this case disclosed a device for carrying out their method, and it is plainly apparent that a computer, operating under

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59. Robotic Vision Systems, Inc. v. View Engineering Inc., 42 USPQ2d 1619, 1622 (Fed. Cir. 1997).

software control, is to be interfaced to the device for controlling the movement of the sensor. Something must be connected to the device for providing control signals to the motors and for receiving information from the linear encoders concerning a position of the sensor, and there is no dispute that that something is a computer.

The facts support the conclusion that software is to be used.

\* \* \*

It simply states that a software program was the only means contemplated of carrying out the invention. From the record before us, it is clear that a software program was involved in the carrying out of the invention and that no other mode existed.

Moreover, as asserted by Robotic, it would have been apparent to one skilled in the art, knowing that software was used in the prior art system, to use software for implementing the improved scanning method claimed in the patent. Yonescu averred that: "A person of ordinary skill in the art to which the `227 patent pertains would know and understand that software is needed to perform the patented method. The details of such software would also be within the skill of a person of ordinary skill in the art to which the `227 patent pertains." View has not provided a basis for concluding that Yonescu's assertions are not correct. Thus, one cannot conclude that a person skilled in the art would not have known that software was the best mode of carrying out the invention and how to implement it. The patent cannot be held to fail to comply with the best mode requirement for lack of the word "software," the use of which was plainly apparent to one skilled in the art. Such a disclosure was implicit in the specification.

Finally, it has not been shown that there is a genuine issue as to whether one skilled in the art would have known how to create specific source code for this purpose. We have previously held in *Hayes* and in *Fonar* (after the district court decided this case) that when disclosure of software is required, it is generally sufficient if the functions of the software are disclosed, it usually being the case that creation of the specific source code is within the skill of the art. *Fonar Corp. v. General Electric Co.*, Nos. 96-1075, 96-1106, and 96-1091, 1997 WL 76027, at \*5 [41 USPQ2d 1801] (Fed. Cir. Feb. 25, 1997); *Hayes*, 982 F.2d at 1537-38, 25 USPQ2d at 1248-49. The functions that software program would instruct the computer to perform for controlling the machine are readily apparent from the specification of the patent at issue here, which describes the scan paths and parameters for full-tray scanning. View has not presented any evidence to controvert Robotic's assertion that one skilled in the art could generate the necessary software program to implement the disclosed functions. We therefore must conclude that the district court erred in

granting summary judgment to View that the '227 patent is invalid for failure to disclose the best mode.

A recent law review article discussed the law of the Federal Circuit on the issue of computer and software patent disclosures:<sup>60</sup>

n87. In recent years, the Federal Circuit has held that software patentees need not disclose source or object code, flowcharts, or detailed descriptions of the patented program. Rather, high-level functional description is sufficient to satisfy both the enablement and best mode doctrines. See *Fonar Corp. v. General Electric Co.*, 107 F.3d 1543, 1549 (Fed. Cir. 1997); see also *Graham & Zerbe*, supra note 53, at 96-97; *Mahajan*, supra note 66, at 3317. The Federal Circuit reasons that "the conversion of a complete thought ... into a language a machine understands is necessarily a mere clerical function to a skilled programmer." *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 941-42 (Fed. Cir. 1990) (quoting *In re Sherwood*, 613 F.2d 809, 817 (1980)). Indeed, the Federal Circuit has gone so far as to hold that patentees can satisfy the best mode requirement for inventions implemented in software even though they do not use the terms "computer" or "software" anywhere in the specification. *Robotic Vision Sys., Inc. v. View Eng'g, Inc.*, 42 U.S.P.Q.2d 1619 (Fed. Cir. 1997); *In re Dossel*, 42 U.S.P.Q.2d 1881 (Fed. Cir. 1997). To be sure, in these latter cases it would probably be obvious to one skilled in the art that the particular feature in question should be implemented in software. Still, it is remarkable that the Federal Circuit is willing to find the enablement requirement satisfied by a patent specification that provides no guidance whatsoever on how the software should be written. It is simply unrealistic to think that one of ordinary skill in the programming field can necessarily reconstruct a computer program given no more than the purpose the program is to perform. The Federal Circuit's peculiar direction in the software enablement cases has effectively nullified the disclosure obligation in software cases.

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60. Cohen, Julie et al, Patent Scope and Innovation In The Software Industry, 89 California Law Review (Jan 2001), Footnote 87.

**2.6.6 Routine Electronic Hardware Development Does Not Involve Experimentation Even Without Considering The Actually Reduced-To-Practice "Experimental System"**

All of the compelling reasons just discussed why routine software development does not involve experimentation even without considering the actually reduced-to-practice "Experimental System" are equally applicable to routine hardware development. This is because the same skill in the programming art also exists in the electronic hardware design art.

"[it is a] fundamental and well understood tenet of the computing art [that] ... 'any software process can be transformed into an equivalent hardware process, and any hardware process can be transformed into an equivalent software process.' " See Ed Klingler, *Microprocessor Systems Design* 5 (1977). Dr. Rhyne stated that this "dualistic transformation," known as the "hardware-/software" tradeoff, effectively means that the selection of a software pointer for a microprocessor versus a hardware switch to control a microprocessor-based system is simply a matter of design choice. This record evidence shows that one of skill in the art would recognize these alternative systems as interchangeable substitutes.

Overhead Door.<sup>61</sup> See also Loom and Sherwood -- because electronic hardware knowledge "is common and well known [it] is as if it were written out in the patent and delineated in the drawings" and "[i]f these bridge-gapping tools are disclosed, there would seem to be no cogent reason to require disclosure of the menial tools known to all who practice this art."

It is well established that the skill in the logic design<sup>62</sup> art was high as of 1967:

DeGeorge need not disclose all circuit details of a word processor or the like. DeGeorge's expert witness Tanner,

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61. Overhead Door v. Chamberlain, 194 F.3d 1261, 52 USPQ2d 1321, 1326 (Fed. Cir. 1999) (emphasis added).

62. "Logic design" is the design with digital "logic" (e.g.; AND gates, OR gates, NAND gates, and NOR gates) to implement digital devices (e.g.; digital processors).

a graduate electrical engineer with years of design experience on word processors, testified that "any logic designer of a normal ability should be able to implement functions given this much description [in the per se '670 disclosure] about them." ...

It is undisputed that counters, comparison circuits, and logic circuits for detecting input signals from a word processor were all familiar to those with skill in logic design, and particularly printer control logic design, in 1967. At that time, there was nothing exotic or unique about the logic elements of the TCCPI circuit and how they interfaced with signal generating control circuits in a word processor.

DeGeorge.<sup>63</sup> See, e.g.; the instant disclosure at Figs. 6B-6D and 6F-6AH and Spec. at 300-371 for digital circuitry implemented with digital integrated circuits.

## 2.7 The Instant Application Provides Many "Working Examples"

The presence of many "examples" in the disclosure is a very compelling fact for enablement. When this fact is considered in combination with the fact of the disclosed actually reduced-to-practice "Experimental System" and other disclosures and the fact of the predictability of the electronic and programming arts, there should be no question that the disclosure is sufficient.

The § 112-1 rejections fail to address the significant "examples" in the instant disclosure despite the fact that the CCPA established the importance of "examples" more than 40 years ago:

In the case of alloys or mixtures .... In such cases an applicant, by fixing the ranges of proportions and describing a few examples throughout the range, may enable anyone skilled in the art to make any product covered by the claim, and may inform him as to what properties such a product will have.

The same principle should apply to claims covering a wide range of distinct chemical compounds. However,

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63. DeGeorge v. Bernier, 768 F.2d 1318, 226 USPQ 758, 762 (Fed. Cir. 1985) (emphasis added).

because of the proportion of unknown compounds it will ordinarily be necessary to give many more examples and much more specific information than would be necessary in the case of an alloy or a mixture.

Cavallito.<sup>64</sup> The significant "examples" in the instant disclosure, the predictability of the electrical and programming arts, and the failure of the Examiner to properly address these important issues are very compelling reasons for reversing the § 112-1 rejections. This is even more compelling in view of the fact that, in predictable arts such as the electrical and programming arts, "examples" are not even necessary.

The Federal Circuit established that "many" examples are necessary in unpredictable arts, such as the chemical art, to support a range of compounds. Hence, the "many" examples in the instant disclosure, which is in the predictable electrical and programming arts are certainly helpful and should have been addressed with approval by the Examiner.

There should be no question that "examples" are very helpful, although not necessary, in the highly predictable electrical and programming arts. Even in the alloy and mixture arts, "by fixing the ranges of proportions and describing a few examples throughout the range may enable anyone skilled in the art to make any product covered by the claim":

In the case of alloys or mixtures, however, it is generally apparent how a product of any desired proportions may be produced, and, since the properties of the aggregate ordinarily vary in accordance with the proportions of the ingredients, the characteristics of any aggregate covered by the claim can generally be predicted with reasonable certainty if the properties of typical aggregates are known. In such cases an applicant, by fixing the ranges of proportions and describing a few examples throughout the range, may enable anyone skilled in the art to make any product covered by the claim, and may inform him as to what properties such a product will have.

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64. In re Cavallito and Gray, 282 F.2d 363, 127 USPQ 202, 205 (CCPA 1960) (emphasis added).

Cavallito.<sup>65</sup>

The CCPA stated with approval that Sichert sets forth "numerous examples":

Moreover, appellant's specification sets forth numerous examples, many with exact doses and a discussion regarding the method of treatment.

Sichert.<sup>66</sup> Similarly, the instant disclosure also sets forth "numerous examples".

The disclosure provides various alternate embodiments (e.g.; alternate system embodiments and software and hardware embodiments) which constitute legal "examples". Just as compelling, the term "example" and terms related thereto occur more than 100 times in the disclosure. The disclosed computer programs alone are "working examples".

#### 2.7.1 The Law On Legal "Examples" Confirms The Significance Of The Actually Reduced-To-Practice "Experimental System"

The instant application provides many "working examples" and the law confirms that these "working examples" establish enablement (discussed below). A significant part of the instant disclosure provides the actually reduced-to-practice "Experimental System" in great detail.

The disclosed "examples" have significant legal weight in support of enablement. However, the § 112-1 rejections fail to provide the "substantial evidence" required by the Federal

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65. In re Cavallito and Gray, 282 F.2d 363, 127 USPQ 202, 205 (CCPA 1960) (emphasis added).

66. In re Sichert, 566 F.2d 1154, 1164, 196 USPQ 209, 217 (CCPA 1977).



Circuit in Gartside, Kotzab, and Zurko<sup>67</sup> and the Examiner has failed to meet the burden imposed by the Federal Circuit in Atlas<sup>68</sup>:

Use of prophetic examples, however, does not automatically make a patent non-enabling. The burden is on one challenging validity to show by clear and convincing evidence that the prophetic examples together with other parts of the specification are not enabling. Du Pont did not meet that burden here. To the contrary, the district court found that the "prophetic" examples of the specification were based on actual experiments that were slightly modified in the patent to reflect what the inventor believed to be optimum, and hence, they would be helpful in enabling someone to make the invention.

As in Atlas, the Examiner "did not meet that burden here." Even more compelling is the fact that the instant disclosure contains hundreds of pages of "working examples" (e.g., the disclosed actually reduced-to-practice "Experimental System").

The PTO recognizes with approval "working examples", "prophetic examples", and "paper examples" and "[s]imulated or predicted test results" (MPEP 2164.02 and MPEP 608.01(p)).

Compliance with the enablement requirement of 35 U.S.C. 112, first paragraph, does not turn on whether an example is disclosed. An example may be "working" or "prophetic." **A working example is based on work actually performed.** A prophetic example describes an embodiment of the invention based on predicted results rather than work actually conducted or results actually achieved.

MPEP 2164.02 (emphasis added). In the instant disclosure, many of the "examples" were actually performed; e.g., the actually reduced-to-practice "Experimental System" and the "examples" thereof captured on video tape (Spec. at 145-150); and other

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67. In re Gartside, 203 F.3d 1305, 53 USPQ2d 1769 (Fed. Cir. 2000); In re Kotzab, 217 F.3d 1365, 55 USPQ2d 1313 (Fed. Cir. 2000); and In re Zurko, 258 F.3d 1379, 59 USPQ2d 1693 (Fed. Cir. 2001).

68. Atlas Powder Co. v. E.I. Du Pont De Nemours & Co., 750 F.2d 1569, 1577, 224 USPQ 409, 414 (Fed. Cir. 1984).

"examples" are "based on work actually performed"; e.g., "based on" the actually reduced-to-practice "Experimental System".

The PTO further discusses "examples" with approval (MPEP 608.01(p)):

Simulated or predicted test results and prophetic examples (paper examples) are permitted in patent applications. Working examples correspond to work actually performed and may describe tests which have actually been conducted and results that were achieved. Paper examples describe the manner and process of making an embodiment of the invention which has not actually been conducted.

The Federal Circuit has approved of characterizing "prophetic examples" as equivalent to "constructive examples".

Specifically, UC argues that a constructive or prophetic example in the '525 specification describes in sufficient detail how to prepare the claimed organism.

Regents of Univ. of Cal..<sup>69</sup>

The law does not require "examples" but the PTO often finds "examples" to be very significant. The PTO cites with approval to Borkowski:<sup>70</sup>

However, as we have stated in a number of opinions, ... a specification need not contain a working example if the invention is otherwise disclosed in such a manner that one skilled in the art will be able to practice it without an undue amount of experimentation.

Similarly, in the instant application, "examples" are not necessary but the many "examples" that are disclosed are very compelling support for enablement. This is particularly so in view of the Borkowski invention being in the relatively unpredictable chemical art while the instant claimed invention is

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69. Regents of Univ. of Cal. v. Eli Lilly & Co., 119 F.3d 1559, 43 USPQ2d 1398, 1404 (Fed. Cir. 1997).

70. In re Borkowski, 422 F.2d 904, 164 USPQ 642 (CCPA 1970) (footnote omitted) cited in MPEP 707.07(1) entitled "Comment on Examples".

in the predictable electrical art and is in the high skill arts of computers and computer programs.

The disclosure itself establishes that many of the "examples" are "based upon" the disclosed actually reduced-to-practice "Experimental System". For example, the sections disclosing various "DISPLAY APPLICATIONS" (Spec. at 439-491) and the sections disclosing various "NON-DISPLAY APPLICATIONS" (Spec. at 492-502) are disclosed as being based upon the image processing system of the present invention.<sup>71</sup>

#### **2.7.2 The Disclosure Includes Many "Examples"**

The instant application provides many "working examples" and the law confirms that these "working examples" establish enablement. The "working examples" are related to the disclosed actually reduced-to-practice "Experimental System". These working examples include software "working examples", hardware "working examples", and "working examples" that are combinations of hardware and software.

Many additional examples -- "prophetic examples", "paper examples", "constructive examples", and the like -- are disclosed in addition to the "working examples" in the instant application.<sup>72</sup> Such examples have special significance in a patent proceeding.

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71. The Table of Contents for these sections and the subsections contained thereunder are excerpted and quoted above and are further set forth in the complete Table of Contents.

72. For convenience of discussion, the legal term "example"; such as in "working example", "prophetic example", "paper example", and "constructive example"; are shown in quotation marks while the general form of the term example, such as in -- for example -- are shown without quotation marks.

Because the instant application provides many "working examples" regarding the disclosed actually reduced-to-practice "Experimental System", other disclosed embodiments are enabled for the reason that their properties can readily be predicted from the "working examples". This despite the facts (a) that the electrical and programming arts are highly predictable, (b) that the other disclosed embodiments have enabling disclosures, and (c) that the other disclosed embodiments include further "examples" to supplement the "working examples":<sup>73</sup>

Claims are commonly allowed for alloys or mixtures which permit substantial variations in the proportions of two or more ingredients. Theoretically an infinite number of products may be produced falling within the scope of such a claim. In the case of alloys or mixtures, however, it is generally apparent how a product of any desired proportions may be produced, and, since the properties of the aggregate ordinarily vary in accordance with the proportions of the ingredients, the characteristics of any aggregate covered by the claim can generally be predicted with reasonable certainty if the properties of typical aggregates are known. In such cases an applicant, by fixing the ranges of proportions and describing a few examples throughout the range, may enable anyone skilled in the art to make any product covered by the claim, and may inform him as to what properties such a product will have.

Because "a few examples" enable ranges of products in the alloy and mixture arts, certainly the extensive disclosure and specific "examples" (not just "ranges") enable the instant claim limitations. This is even more compelling because the electrical and programming arts are even more predictable than the alloy and mixture arts.

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73. In re Cavallito and Gray, 282 F.2d 363, 127 USPQ 202, 204-205 (CCPA 1960) (emphasis added).

The Table of Contents and the sections listed provide many "examples" of display and non-display applications.

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The video tapes of operation of the disclosed actually reduced-to-practice "Experimental System" and the discussions related thereto in the disclosure (Spec. at 145-150, "Experimental System Video Tape") provide many additional "working examples".

The disclosure itself establishes that many of the "examples" are "based upon" the disclosed actually reduced-to-practice "Experimental System". For example, the sections disclosing various "DISPLAY APPLICATIONS" (Spec. at 439-491) and the sections disclosing various "NON-DISPLAY APPLICATIONS" (Spec. at 492-502) are disclosed as being "based upon" the image processing system of the present invention.<sup>74</sup>

#### DISPLAY APPLICATIONS

##### General

Display applications for **the image processing disclosed herein** are many and varied. Most display applications currently satisfied with CG and CIG systems can use **the present image processing system of the present invention** ....

Most display applications needing image processing capability can use **the present image processing system of the present invention**. These image processing applications include medical image processing, video special effects, and many others....

**The system of the present invention** can be used for training of personnel, such as a simulator; as a display for a vehicle, such as for an aircraft cockpit display; for investigation and evaluation of large dynamic range database information, such as with LANDSAT images; and for many other applications.

Spec. at 439-440 (first two emphases in original, all other emphasis added).

#### NON-DISPLAY APPLICATIONS

##### General Description

Various applications of **the system of the present application** are non-display applications; such as automatic pattern recognition, robotics, and artificial intelligence applications.

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74. The Table of Contents for these sections and the subsections contained thereunder are excerpted and quoted above and are further set forth in the complete Table of Contents.

Spec. at 492-493 (first two emphasis in original, all other emphasis added).

### III. 37 CFR 1.78(B) OBJECTION

The '78(b) objection is an improper constructive or de facto double patenting rejection that is not only unnecessary but is also improper in view of the double patenting rejections. First, because of the double patenting rejections in the instant Action, this '78(b) objection is duplicative and hence not necessary. Second, because the '78(b) objection forces a decision prior to the Applicant being permitted to appeal the double patenting rejections, the '78(b) objection improperly seeks to deprive the Applicant of his right to appeal the double patenting rejections. Third, as established herein, there is no basis for rejecting.

The '78(b) objection is an improper constructive **rejection**. Because the issue of similar claims is addressed in the instant Action with double patenting **rejections** which are appealable, the double patenting issues cannot **also** be covered by an '78(b) objection which is petitionable.

The '78(b) objection (constructive rejection) violates MPEP 706.01.

The refusal to grant claims because the subject matter as claimed is considered unpatentable is called a 'rejection.' The term 'rejected' must be applied to such claims in the examiner's letter. **If the form of the claim (as distinguished from its substance) is improper, an 'objection' is made.** An example of a matter of form as to which objection is made is dependency of a claim on a rejected claim, if the dependent claim is otherwise allowable. See MPEP 608.01(n). **The practical difference between a rejection and an objection is that a rejection, involving the merits of the claim, is subject to review by the Board of Patent Appeals and Interferences, while an objection, if persisted, may be reviewed only by way of petition to the Commissioner.**

See MPEP 706.01 (emphasis added). Because the '78(b) objection is directed to the substance (not the form) of the claims and because the '78(b) objection involves the merits of the claims, the '78(b) objection is an improper constructive rejection.



Hence, the '78(b) objection must be withdrawn. See also Mercier.<sup>75</sup>

The '78(b) objection is an improper **de facto rejection**. The CCPA and hence the Federal Circuit expressly prohibit such **de facto** rejections.<sup>76</sup>

[W]e conclude that the examiner's demands, under threat of abandonment, that petitioners do more than they did amounted to a **de facto rejection** of petitioners' claims .... The subsequent ruling of abandonment by the Deputy Assistant Commissioner, precluding petitioners from an appeal to the Board of Appeals from the **de facto rejection**, clearly had the effect of frustrating this court's prospective appellate jurisdiction over an appeal from a decision of the Broad (sic) of Appeals. As the Supreme Court stated in Roche v. Evaporated Milk Ass'n ....

[A]uthority is not confined to the issuance of writs in aid of a jurisdiction already acquired by appeal but extends to those cases which are within its appellate jurisdiction although no appeal has been perfected. Otherwise the appellate jurisdiction could be defeated and the purpose of the statute authorizing the writ thwarted by unauthorized action of the district court obstructing the appeal.

[bold emphasis added] [citations omitted] Id. at 372-73.

Further, Margolis establishes that the court will hear writs regarding such **de facto rejections**.

[T]he court clearly has the power to issue writs under the All Writs Act in aid of its prospective appellate jurisdiction in the face of action by the Commissioner or those acting under his authority that would frustrate such prospective appellate jurisdiction. Id. at 371.

The '78(b) objection is judicially estopped. The Examiner objects to the claims under '78(b) and then rejects the same claims for double patenting. This scheme is prohibited by the doctrine of judicial estoppel.

Under the doctrine of judicial estoppel, where a party assumes a certain position, he may not thereafter assume a

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75. In re Mercier, 515 F.2d 1161, 185 USPQ 774 (CCPA 1975).

76. Margolis v. Banner, 599 F.2d 435, 202 USPQ 365 (CCPA 1979).

contrary position. Davis v. Wakelee, 156 U.S. 680, 689 (1895). See also U.S. Philips v. Sears Roebuck & Co., 55 F.3d 592, 596 (Fed.Cir.), cert. denied, 116 S.Ct. 567, and cert. denied, 116 S.Ct. 672 (1995). As the Federal Circuit explained in Sears, judicial estoppel is designed to preserve the integrity of the judicial process by "protecting against litigants who 'play fast and loose with the courts.'" Id. at 596-97.

The double patenting objections and rejections appear to be based upon similarities between dependent claims in copending applications. However, the Examiner is reminded that he must also address the limitations set forth in the parent claims from the claims depend.

The '78(b) objection does not approach the specificity required to establish a prima facie case and to inform the Applicant of the nature of the issues as required by 35 USC 132.<sup>77</sup>

Various examples of the non-specific and uninformative nature of the '78(b) objection are as follows.

a. The claims are not addressed individually nor even identified by claim number or quantity, but rather are objected to all together as a group.

b. Each of the instant claims has distinguishing limitations that are not found in the copending claims.

c. The Examiner has not shown where the copending claims meet the distinguishing limitations of the instant claims.

d. Distinguishing claim limitations have been ignored.

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77. See also 37 CFR 1.106(b); Chester v. Miller, 906 F.2d 1574, 1578, 15 USPQ2d 1333, 1337 (Fed. Cir. 1990) ("Section 132 is violated when a rejection is so uninformative that it prevents the applicant from recognizing and seeking to counter the grounds for rejection."). See also In re Oetiker, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992).

e. The '78(b) objection does not provide a Graham v. Deere<sup>78</sup> analysis (MPEP 804).

f. The Examiner ignores the restriction requirements made in the ancestor applications, which are relevant to the '78(b) objection in accordance with 35 USC 121.

g. The '78(b) objection does not provide a limitation by limitation analysis as required by the Federal Circuit<sup>79</sup>.

h. The '78(b) objection does not establish that the claim differences are obvious.

The burden of establishing a prima facie case rests with the Examiner. This burden is not satisfied by a mere unsupported statement.<sup>80</sup>

Each claim must be evaluated individually. In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The '78(b) objection does not properly acknowledge that different claims in the instant application recite different combinations of features, much less compare these different combinations of features with the copending claims nor properly address the claim differences. Therefore, ignoring the claim differences is fatal to the '78(b) objection.

The instant claims are all objected to together as a group of claims. This all-encompassing '78(b) objection to the instant claims is improper. Each claim must be evaluated individually. In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). In re Wright, 999 F.2d 155, 27 USPQ2d 1510 (Fed. Cir. 1993).

There are significant differences between the instant claims and the copending claims. Hence, it is incumbent upon the Examiner to establish that these differences are obvious. In re

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78. Graham v. Deere, 383 U.S. 1, 148 USPQ 459 (1966).

79. Gechter v. Davidson, 43 USPQ2d 1031 at 1035 (Fed. Cir. 1997).

80. In re Edwards, 568 F.2d 1349, 196 USPQ 465, (CCPA 1978); In re Oetiker, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992).

Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985). However, the instant Action fails to establish that the differences are obvious.

An obviousness-type '78(b) objection is analogous to an obviousness issue under 35 USC 103. In re Braithwaite, 379 F.2d 594, 154 USPQ 29 (CCPA 1967). Thus, a prima facie case for an obviousness-type '78(b) objection must be established in the same manner that it is required for a rejection under 35 USC 103. In re Longi<sup>81</sup>. Accordingly, the factual inquiries set forth in Graham v. Deere must be employed when making an obviousness-type '78(b) objection analysis. See also MPEP 804. However, the instant Action, by failing to provide this required analysis is a violation of the law of the Federal Circuit.

The Examiner's reliance on the double patenting rejections similarly do not establish a prima facie case for the '78(b) objection. Notwithstanding the '78(b) objection being an improper constructive or de facto double patenting rejection, the instant Action does not establish a prima facie case for the double patenting rejections.

Since the '78(b) objection does not establish a prima facie case, the '78(b) objection should be withdrawn. In re Oetiker, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992).

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81. In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985).

#### IV. TRAVERSE OF 37 CFR 1.83 AND 37 CFR 1.75 OBJECTIONS

The Applicant traverses the objections for the reasons discussed below.

The 37 CFR 1.75 and 37 CFR 1.83 objections do not establish a prima facie case. For example, the subject features are shown and are recited at numerous places in the extensive disclosure, but the objections completely disregard the extensive disclosure and instead makes general statements about the absence of the subject features in the disclosure.

The 37 CFR 1.75 and 37 CFR 1.83 objections are improper constructive rejections of claims and are in conflict with the 35 USC 112-1 rejection. For example, this issue is covered by the 35 USC 112-1 rejection in the instant action and this issue is clearly appealable; hence this issue cannot also be covered by an objection which is petitionable.

It is well established that it is the content and not the form of the disclosure that is important In re Sherwood, 204 USPQ 537, 545 footnote 8 (CCPA 1980). The claim elements are shown in the figures sufficient to meet 37 CFR 1.83(a). A requirement for any more would violate In re Sherwood.

The Examiner's conclusory statements objecting to the drawings are not evidence and certainly not the required "substantial evidence" (see below). However, the drawings themselves constitute "substantial evidence", are presumed to be correct,<sup>82</sup> and satisfy § 112-1 and the PTO requirements regarding drawings. Hence, clarification is requested regarding the particular claim limitations that the Examiner contends are missing from the drawings and reasons why the drawings as filed do not illustrate such claim limitations.

35 USC § 113 establishes that a drawing isn't even necessary ("The applicant shall furnish a drawing where necessary.... When

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82. See MPEP 2164.04. See also In re Marzocchi, 439 F.2d 220, 169 USPQ 367 (CCPA 1967).

the nature of such subject matter admits of illustration by a drawing ...." (emphasis added)).

37 CFR § 1.83(a) establishes that a labeled box is suitable ("conventional features disclosed in the description ... should be illustrated in the drawing in the form of a graphical drawing symbol or a labeled representation (e.g., a labeled rectangular box)").

The objection mischaracterizes the issue. There is nothing in the drawings that is objectionable, it is the recitations in the claims that the Examiner finds objectionable. The Examiner cannot object to the drawings for what is not shown in the drawings, there is nothing inherently wrong with the drawings by themselves. The Examiner is actually objecting to the claims as not having a basis in the drawings. However, this issue must involve a rejection. Without a rejection involving the drawings, the Examiner cannot make an objection to the drawings. This is because "[the Board's] decision regarding the § 112 rejection governs the merits of the objection". The objection based on the language of the claims cannot stand alone without a rejection. See Ex parte Kazmierczak,<sup>83</sup> at 5.

The Federal Circuit requires "substantial evidence" to support a rejection. See Gartside and Kotzab.<sup>84</sup>

The reviewing court shall --

\* \* \*

(2) hold unlawful and set aside agency actions, findings, and conclusions found to be --

\* \* \*

(E) unsupported by substantial evidence ....

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83. Ex parte Kazmierczak, Appeal No. 97-3469 (Bd. Pat. App. & Int.) (unpublished opinion), at <http://www.uspto.gov/web/offices/dcom/bpai/decisions/fd973469.pdf>. See also U.S. Patent No. 6,005,751 (issued December 21, 1999 to Kazmierczak).

84. In re Gartside, 53 USPQ2d 1769 (Fed. Cir. 2000); In re Kotzab, 55 USPQ2d 1313 (Fed. Cir. 2000).

Gartside.<sup>85</sup>

V.      THE EXAMINER HAS FAILED TO PROVIDE THE REQUIRED  
"SUBSTANTIAL EVIDENCE" AND HAS FAILED TO ESTABLISH  
A PRIMA FACIE CASE TO COUNTER THE APPELLANT'S  
ENTITLEMENT TO A PATENT

The Applicant is entitled to a patent. The Examiner is required to provide "substantial evidence" and to establish a prima facie case in order to challenge the Applicant's entitlement thereto. However, the Examiner has not provided the required "substantial evidence" and has not established a prima facie case. Instead, the Examiner relies on unsupported conclusory statements and on irrelevant statements. Such statements are expressly discouraged by the Federal Circuit and do not satisfy the requirement for providing "substantial evidence".

5.1      The Applicant Is Entitled To A Patent

The Applicant is entitled to a patent because he has met the legal requirements. The Examiner not provided the "substantial evidence" and has not established a prima facie case to challenge this entitlement.

Judge Plager, in his concurring opinion in Oetiker<sup>86</sup>, stated:

An applicant for a patent is entitled to the patent unless the application fails to meet the requirements established by law. It is the Commissioner's duty (acting through the examining officials) to determine that all

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85. In re Gartside, 53 USPQ2d 1769, 1773 (Fed. Cir. 2000).

86. In re Oetiker, 977 F.2d 1443, 1449, 24 USPQ2d 1443, 1447 (Fed. Cir. 1992).

requirements of the Patent Act are met. The burden is on the Commissioner to establish that the applicant is not entitled under the law to a patent. In re Warner, 379 F.2d 1011, 1016, 154 USPQ 173, 177 (CCPA 1967), cert. denied, 389 U.S. 1057 (1968). In rejecting an application, factual determinations by the PTO must be based on a preponderance of the evidence, and legal conclusions must be correct. In [sic] re Caveney, 761 F.2d 671, 674, 226 USPQ 1, 3 (Fed. Cir. 1985).

The process of patent examination is an interactive one. See generally, Chisum, Patents, § 11.03 et seq. (1992). The examiner cannot sit mum, leaving the applicant to shoot arrows into the dark hoping to somehow hit a secret objection harbored by the examiner. The 'prima facie case' notion, the exact origin of which appears obscure (see In re Piasecki, 745 F.2d 1468, 1472, 233 USPQ 785, 788 (Fed. Cir. 1984)), seemingly was intended to leave no doubt among examiners that they must state clearly and specifically any objections (the prima facie case) to patentability, and give the applicant fair opportunity to meet those objections with evidence and argument. To that extent the concept serves to level the playing field and reduces the likelihood of administrative arbitrariness. \* \* \*

Specifically, when obviousness is at issue, the examiner has the burden of persuasion and therefore the initial burden of production. Satisfying the burden of production, and thus initially the burden of persuasion, constitutes the so-called prima facie showing. Once that burden is met, the applicant has the burden of production to demonstrate that the examiner's preliminary determination is not correct. The examiner, and if later involved, the Board, retain the ultimate burden of persuasion on the issue.

If, as a matter of law, the issue is in equipoise, the applicant is entitled to the patent. Thus on appeal to this court as in the PTO, the applicant does not bear the ultimate burden of persuasion on the issue. In the end there is no reason there or here to argue over whether a 'prima facie' case was made out. The only determinative issue is whether the record as a whole supports the legal conclusion that the invention would have been obvious.

Similarly, in the instant case, the Examiner has not met his burden with factual determinations, based on a preponderance of the evidence, or with proper legal conclusions. Hence, the Applicant is entitled to a patent as a matter of law.



5.2     The U.S. Supreme Court And The Federal Circuit  
          Require "Substantial Evidence" To Support A Rejection

The Federal Circuit requires "substantial evidence" to support a rejection. See Gartside and Kotzab.<sup>87</sup>

The reviewing court shall --

\* \* \*

(2) hold unlawful and set aside agency actions, findings, and conclusions found to be --

\* \* \*

(E) unsupported by substantial evidence ....

Gartside.<sup>88</sup>

"[W]e review the Board's underlying factual findings for substantial evidence ...." Kotzab.<sup>89</sup>

In this case, the rejections are not supported by "substantial evidence", but rather are supported by irrelevant and erroneous arguments and improper conclusory statements. Hence, the rejections cannot stand.

"Substantial evidence" is described by the Federal Circuit as follows:

[T]he "substantial evidence" standard asks whether a reasonable fact finder could have arrived at the agency's decision.

Gartside.<sup>90</sup> The Gartside court quotes the U.S. Supreme Court in Consolidated<sup>91</sup>:

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87. In re Gartside, 53 USPQ2d 1769 (Fed. Cir. 2000); In re Kotzab, 55 USPQ2d 1313 (Fed. Cir. 2000).

88. In re Gartside, 53 USPQ2d 1769, 1773 (Fed. Cir. 2000).

89. In re Kotzab, 55 USPQ2d 1313, 1316-17 (Fed. Cir. 2000).

90. In re Gartside, 53 USPQ2d 1769, 1773 (Fed. Cir. 2000) (citing Consolidated Edison Co. v. NLRB, 305 U.S. 197, 229 (1938)).

91. In re Gartside, 53 USPQ2d 1769, 1773 (Fed. Cir. 2000) (quoting Consolidated Edison Co. v. NLRB, 305 U.S. 197, 229-30 (1938)) (parenthetical added, ellipsis in original).

It ["substantial evidence"] means such relevant evidence as a reasonable mind might accept as adequate to support a conclusion .... Mere uncorroborated hearsay or rumor does not constitute substantial evidence.

But the rejections are not supported by "substantial evidence". Instead, the Examiner relies on conclusory statements and irrelevant and erroneous statements. Hence, the rejections violate the law of the Federal Circuit and the law of the U.S. Supreme Court.

5.3     The Examiner Relies On Conclusory Statements  
And Irrelevant Statements, Which Are Expressly  
Discouraged By The U.S. Supreme Court And  
By The Federal Circuit

The Examiner relies on conclusory statements and irrelevant statements, which are expressly discouraged by the U.S. Supreme Court and by the Federal Circuit. The Gartside court quotes the U.S. Supreme Court in Consolidated<sup>92</sup>:

It ["substantial evidence"] means such relevant evidence as a reasonable mind might accept as adequate to support a conclusion .... Mere uncorroborated hearsay or rumor does not constitute substantial evidence.

This is confirmed in Kotzab.<sup>93</sup>

Whether the Board relies on an express or an implicit showing, it must provide particular findings related thereto .... Broad conclusory statements standing alone are not "evidence."

However, the rejections are not supported by "substantial

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92. In re Gartside, 53 USPQ2d 1769, 1773 (Fed. Cir. 2000) (quoting Consolidated Edison Co. v. NLRB, 305 U.S. 197, 229-30 (1938)) (parenthetical added, ellipsis in original).

93. In re Kotzab, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000).



evidence". Instead, the Examiner relies on conclusory statements and irrelevant and erroneous statements.

The Federal Circuit requires the PTO to "explicate its factual conclusions", but the Examiner provides irrelevant arguments and conclusory arguments.

We have expressly held that the Board's opinion must explicate its factual conclusions, enabling us to verify readily whether those conclusions are indeed supported by "substantial evidence" contained within the record. See Gechter v. Davidson, 116 F.3d 1454, 1460, 43 USPQ2d 1030, 1035 (Fed. Cir. 1997)

Gartside.<sup>94</sup>

Whether the Board relies on an express or an implicit showing, it must provide particular findings related thereto .... Broad conclusory statements standing alone are not "evidence."

Kotzab.<sup>95</sup>

#### AMENDMENTS

No amendments are proposed herein.

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94. In re Gartside, 53 USPQ2d 1769, 1774 (Fed. Cir. 2000).

95. In re Kotzab, 55 USPQ2d 1313 (Fed. Cir. 2000)..

Please charge any fees associated with the papers transmitted herewith to Deposit Account No. 08-3626. A Declaration claiming small entity status has been filed herein.

CERTIFICATION OF MAILING BY EXPRESS MAIL: I hereby certify that this correspondence is being deposited with the United States Postal Service with Express Mail post office to addressee service under 37 CFR 1.10, postage prepaid, in an envelope addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231 with the express mail label number EV 069541456 December 10, 2002.

Respectfully submitted,

Dated: December 10, 2002

A handwritten signature in cursive script, reading "Gilbert P. Hyatt", is written over a horizontal line.

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